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A STUDY OF SCIENTIFIC ATTITUDE, SCIENTIFIC APTITUDE AND INTELLIGENCE OF B.Ed. STUDENTS

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ABSTRACT

Education alone can sustain culture and civilization since it is a powerful agent universally for all-round progress of an individual as well as social transformation. Actual meaning of education is nothing but a proper development of Bonce (cognitive), Core (affective) and Limb (psychomotor), i.e., insight of mind, compassion and dignity of workmanship. Attaining a continuous reconstruction of experience in our daily life is the educational process. This whole process of gaining experience, acquisition of knowledge and adaptation to the environment through formal, informal or non-formal means is called learning. Different psychologists and educationists have defined learning in different ways. A few definitions are given here as follows: The author of this article wants to know the relationship between Attitude, Aptitude and Intelligence of B.Ed. Science students comprising of Physical Science, Biological Science and Computer Science groups. Science students anticipate success of an event based on their scientific attitude, scientific aptitude and intelligence in the learning environment. It is a general tendency that students enjoy the activities only if they receive any feedback or due recognition. The main objective this study is to study the relationship between Scientific Attitude, Scientific Aptitude and Intelligence of B.Ed. first year students who opted Science groups, viz., Physical Science, Biological Science and Computer Science.

KEYWORDS: Scientific Attitude, Scientific Attitude & Intelligence

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Original Article

INTRODUCTION

Education alone can sustain culture and civilization since it is a powerful agent universally for all-round progress of an individual as well as social transformation. Actual meaning of education is nothing but a proper development of Bonce (cognitive), Core (affective) and Limb (psychomotor), i.e., insight of mind, compassion and dignity of workmanship. Attaining a continuous reconstruction of experience in our daily life is the educational process. It is the development of all those capacities in the individual, which will enable him to control his environment and fulfill his possibilities. A person may attain his all-round development through education only. His communication to outer world as well as to his own inner world can be refined systematically. Learning makes memory and modify behaviors from the combination of knowledge, understanding, application and skill and so is the prime goal of education and experience. Learning ranges from simple to more complex forms, seen only in large vertebrates. From the time of conception to the birth of a child, it is surrounded by the environment. Both the environment and the child, and the environment and the embryo influence each other. Due to the interaction, behavioral changes occur in the embryo and the child. These normal modifications of behavior are called learning. The changes of learning during embryonic stages are biological due to hormonal influence and interaction between the child and its environment in the mother's womb. After birth, the infant is surrounded by the abiotic, biotic and social

environment. Every individual interacts with his or her surrounding, gains experiences and adapts to them for survival and development. This whole process of gaining experience, acquisition of knowledge and adaptation to the environment through formal, informal or non-formal means is called learning. Different psychologists and educationists have defined learning in different ways. A few definitions are given here as follows: The author of this article wants to know the relationship between Attitude, Aptitude and Intelligence of B.Ed. Science students comprising of Physical Science, Biological Science and Computer Science groups.

NEED AND SIGNIFICANCE OF THE STUDY

Science students anticipate success of an event based on their scientific attitude, scientific aptitude and intelligence in the learning environment. It is a general tendency that students enjoy the activities only if they receive any feedback or due recognition. This study is conducted:

- To know how far science students in teacher training enable themselves to aim at success and how skill fully they get over the task.
- To know how far science students in teacher training acquire knowledge and experience of the task from the involvement of doing tasks.
- To know the remedial measures that have to be given for those students who have lower rate of success.
- To improve students' skill to proceed in a unique and pleasurable way, involving themselves into the activities targeting success.

STATEMENT OF THE PROBLEM

A Study of Scientific Attitude, Scientific Aptitude and Intelligence of B.Ed. Science students.

OBJECTIVES OF THE STUDY

- To identify and confirm B.Ed. first year students with Scientific Attitude.
- To identify and confirm B.Ed. first year students with Scientific Aptitude.
- To identify and confirm B.Ed. first year students with Intelligence.
- To study the relationship between Scientific Attitude, Scientific Aptitude and Intelligence of B.Ed. first year students who opted Science groups, viz., Physical Science, Biological Science and Computer Science.

HYPOTHESES

- There are no significant differences in the overall Scientific Attitude and in its dimensions of the B.Ed. Science students belonging to different groups based on

  * Sex* Pedagogy * Number of Parents
  * Birth Order * Family Income per month

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* Sex* Pedagogy * Number of Parents

* Birth Order * Family Income per month

METHOD OF STUDY

In this present investigation, Survey Method is preferred by the author. The study focused on the data collected by using rating scales.

TOOLS USED

The investigation aims at finding the impact of scientific attitude, scientific aptitude and intelligence in learning B.Ed. The following tools of research were employed for the present study.

- Scientific Attitude scale (SAS) by Dr. Mrs. Avinash Grewel.
- The Scientific Aptitude test by Dr. A. K. P. Sinha and Dr. L. N. K. Sinha.
- Measurement of Intelligence by Dr. G. C. Ahuja.

SAMPLE SIZE AND TECHNIQUE

In the present study, the population selections were B.Ed. students. The data were collected from 40 science students randomly from a School of Education in Chennai.

LIMITATIONS OF THE STUDY

Geographically, sample area opted was Chennai district that too only one college of Education.

- Due to time constraint, the investigator could not survey all the schools of education in Chennai.
- The investigator further restricted her research study only to science students studying B.Ed.

STATISTICAL TECHNIQUES USED

In the present study, the following statistical techniques were used.

- Descriptive Analysis (Mean, Standard Deviation),
- Differential Analysis (t - values, F - ratios)

Reliability and Validity (Scientific Attitude Scale)

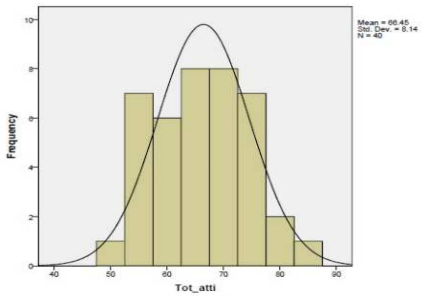

Figure 1

Cronbache Alpha Coefficient was estimated in order to establish reliability for the Scientific Attitude tool. It was found to be **0.699.** The intrinsic validity coefficient was established by taking square root of reliability coefficient, which is equal to **0.836**. Thus, from these two coefficients, it may be inferred that his tool is good, highly reliable and valid.

Reliability and Validity (Scientific Aptitude Scale)

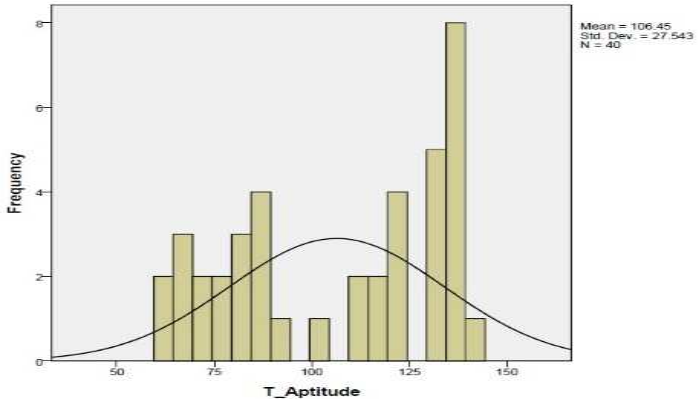

Figure 2

Cronbache Alpha Coefficient was found in order to establish reliability for the Scientific Aptitude tool. It was estimated to be **0.685.** The Intrinsic Validity Coefficient was found by taking square root of reliability coefficient, which is equal to **0.827**. Thus, from these two coefficients, it may be inferred that his tool is Good, Reliable and Valid.

Reliability and Validity (Intelligence Scale)

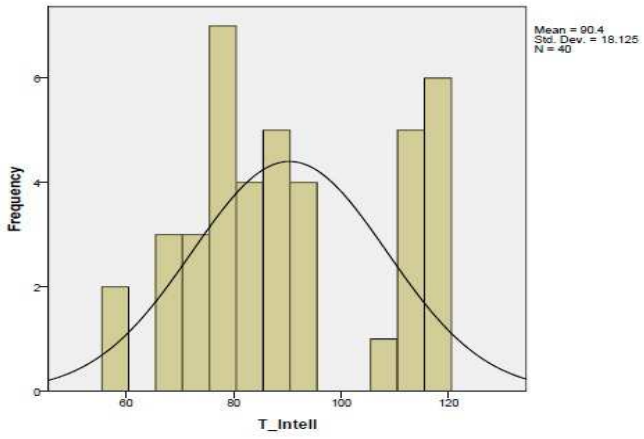

Figure 3

Cronbache Alpha Coefficient was estimated in order to establish reliability for the tool Intelligence Test. It was estimated to be **0.862.** The Intrinsic Validity Coefficient was found by taking square root of reliability coefficient, which is equal to **0.928**. Thus, from these two coefficients, it may be inferred that this tool is excellent, highly reliable and valid.

- **Scientific Attitude Scale (SAS)**

  The Scientific Attitude may be defined as a generalized attitude towards the universe of science content. So, measurement of scientific attitude towards Student Teachers is needy and essential for investigator. This Science Attitude Scale (SAS) consists of 20 items, where 10 positive items (S.Nos.2, 4, 6, 8, 10, 12, 14, 16, 18, 20) and 10 negative items (S. Nos. 1, 3, 5, 7, 9, 11, 13, 15, 17, 19) are present

- **Administration of the SAS**

  Science Attitude Scale is a self-reporting questionnaire consisting of 20 items designed to assess the attitude of individuals towards science. The researcher personally explained about the test for 5 minutes and the students had taken 15 minutes for giving responses to the items on the scale.

- **Scoring of the SAS**

  Each of the 10-positive item of the scale is set a weightage ranging from 4 (Strongly Agree) to zero (Strongly Disagree). For 10 negative items of the SAS, scoring can be reversed ranging from zero (Strongly Agree) to 4 (Strongly Disagree). The attitude score of a subject is the sum total of scores on all the 20 items in the scale. Thus, a maximum of 80 scores can be obtained by a subject. However, the administration of the test reveals that the scores ranged from 25 to 70.

- Scie**ntific Aptitude Test**

  The Scientific Aptitude test developed by Dr. A. K. P Sinha and Dr. A. K. P. Sinha was utilised for the present study to measure the scientific aptitude of Student Teachers following the syllabus of Tamil Nadu Teachers Education University. This test consisted of 34 items under seven areas, the details are given in table.

Table 1: Distribution of Items

Sl. No.	Areas	No. of Items.
1	Accuracy of interpretation	4
2	Detection of inconsistencies	7
3	Ability to deduce conclusions	6
4	Experimental bent	5
5	Ability to reason and solve problems	7
6	Accuracy of observation	1
7	Caution and Thoroughness	4

- **Intelligence Test**

  This test is meant for measuring the intelligence of adult pupils exclusively. There are seven tests in this battery. For each and every test, one page has been devoted for instructions and practice examples. Directions for taking the test are printed on the test battery. They are to be read silently by the pupils, while the examiner reads them aloud. Answers have to be marked on the separate answer sheet provided and the test booklet is reusable.

A scoring method was used to score the result by counting the total number of scores in all the sections of the test with the following norms:

01 – 69 - Low

70–139 - Moderate

140-270 - High

The table shows distribution of samples and their Mean, SD.

Table 2

Personal Variables	Categories	Frequency	Percentage (%)
Sex	Boys	20	50.0
	Girls	20	50.0
Pedagogy	Phy. Science	14	35.0

	Bio. Science	16	40.0
	Comp. Science	10	25.0
Number of Parents	Single	10	25.0
	Both	30	75.0
Birth Order	First Born	10	25.0
	Middle Born	25	62.50
	Last Born	5	12.50
Family Income per month	<10K	8	20.0
	10–20K	15	37.50
	>20K	17	42.50
TOTAL		**40**	**100.0**

FINDINGS OF THIS INVESTIGATION

Findings given below based on Descriptive and Differential analysis of the data related to Overall Scientific Attitude, Scientific Aptitude and Intelligence.

- Boys and Girls differed significantly in overall Scientific Attitude, where Boys are better than Girls.
- The students of Physical Science, Biological Science and Computer Science differed significantly in overall Scientific Attitude, where Physical Science students are better than other two groups.
- The students of Single Parent and Both Parents differed significantly in overall Scientific Attitude, where students having single parent are better than both parents.
- The students born First, Middle and Last differed significantly in overall Scientific Attitude, where students born last are better than other two birth orders.
- The students belong to various levels of Income from the family per month did not differ significantly in overall Scientific Attitude.
- The students belong to different sex, viz., Boys and Girls did not differ significantly in overall Scientific Aptitude.
- The students of Physical Science, Biological Science and Computer Science differed significantly in overall Scientific Aptitude, where Computer Science students are better than the other two groups.
- The students of Single Parent and Both Parents differed significantly in overall Scientific Aptitude, where students having single parent are better than both parents.
- The students born First, Middle and Last differed significantly in overall Scientific Aptitude, where students born Middle are better than other two birth orders.
- The students belong to various levels of income of the family per month did not differ significantly in overall Scientific Aptitude.
- Boys and Girls did not differ significantly in overall Intelligence.
- The students of Physical Science, Biological Science and Computer Science differed significantly in overall Intelligence, where Computer Science students are better than the other two groups.
- The students of Single Parent and Both Parents differed significantly in overall Intelligence, where students

having both parents are better than single parent.

- The students born First, Middle and Last differed significantly in overall Intelligence, where students born last are better than other two birth orders.
- The students belong to various levels of income of the family per month did not differ significantly in overall Intelligence.

CONCLUSIONS

Thus, the responses of the Student Teachers revealed that some of the demographical variables viz., Pedagogy, Number of Parents and Birth Order brought slight differences in Scientific Attitude, Scientific Aptitude and Intelligence. Student Teachers who opted Computer Science pedagogy having both parents and born last in the birth order have had better Scientific Attitude, Scientific Aptitude and Intelligence.

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